PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Holland, et al.

Serial No.: Filed Herewith

Filed: Filed Herewith

For: *NONABRASIVE MEDIA WITH ACCELERATED CHEMISTRY*

Group Art Unit: Unknown

Examiner: Unknown

Atty. Dkt. No.: 12350.0008.CNUS01

PRELIMINARY COMMENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

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Jackson
Signature

Sir:

Before undertaking the examination of the above noted application, Applicants hereby request the following be considered by the Examiner:

The claims of the parent application were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the U.S. Patent No. 4,818,333 issued to Michaud et al. ("the '333 reference") in view of U.S. Patent No. 3,684,466 issued to Petrone ("the '466 reference"), and /or allegedly being unpatentable over the '333 reference in view of U.S. Patent No. 4,307,544 issued to Balz ("the '544 reference"). Applicants file this continuation with important modifications to the claims that now place the claims in a condition to be allowed by the Examiner.

First, independent claims 1 and 21 have been modified so as to expressly point out that it is the plastic or metal non-abrasive media in conjunction with active chemistry, which reacts with the surface of the metal workpiece, (i.e., a chemical/mechanical process, as described in the present invention) that is doing the actual finishing of the metal workpiece, not some embedded abrasive particles mixed with or actually a part of the non-abrasive media (i.e., a strictly mechanical process, as described in the '466 and '544 references). This is not shown in the prior art. Although the '333 reference is also a chemical/mechanical process, it specifies that only high density non-abrasive ceramic media in conjunction with active chemistry will generate the desired results. Furthermore, it is now claimed that the non-abrasive plastic or metal media in conjunction with active chemistry is capable of superfinishing the surface of the metal workpiece, again, a property that is also not found in the prior art. Therefore, Applicants respectfully assert that the claims are now in a condition for allowance.

For instance, with respect to independent claim 1, in an advisory action received in the parent of the instant application, the Examiner stated that "Applicant has argued that the '466 patent does not show the use of a tumbling chip alone for superfinishing the surface of a metal article, however this is not a limitation of the claims."

While the '466 patent does state that the plastic media could contain 0% abrasive, it is well known to those practiced in the art that such a media would be used for polishing only, and would remove no stock from a metal workpiece unless it is used in conjunction with abrasives. The abrasives may be loose or they may be incorporated into the plastic matrix.

Element (b) of claim 1 now includes the limitation required by the Examiner, as shown below:

> (b) agitating the metal article, the non-abrasive plastic media, and chemical solution in the vibratory finishing apparatus *so as to allow the non-abrasive plastic media to remove the blackmode from the surface of the metal article*,

> thereby refining the surface of the metal article, after which the blackmode is immediately re-formed by the reaction between the metal article and the chemical solution for further refining by the non-abrasive plastic media, until the metal article achieves a superfinished surface.

(emphasis added)

As is shown above, applicant added the necessary language to claim 1 that expressly states that the non-abrasive plastic media removes the soft blackmode generated by the active chemistry from the surface of the metal workpiece, without the use of any hard abrasive particles. This is not shown in either the '333 patent or the '466 patent. In the '333 patent, abrasive ceramic media removes the blackmode. Again the '333 reference is also a chemical/mechanical process, but it specifies that only high density non-abrasive ceramic media in conjunction with active chemistry will generate the desired results. In the '466 patent the plastic tumbling chips are used with loose abrasives or with abrasives incorporated into the plastic matrix to effect refinement (i.e., stock removal).The plastic tumbling chips cannot effect refinement on their own, but can only polish an already smoothed surface. Thus, in this respect claim 1 is patentable over the combination of the '333 and '466 references.

Furthermore, a limitation requiring the agitation to continue until the metal article achieves a superfinished surface has been added as well, a result that is not accomplished by the process disclosed in the '466 patent. Therefore, Applicants respectfully submit that independent claim 1 and all claims that depend there from are now patentable over the '333 patent in view of the '466 reference.

With respect to independent claim 21, the Examiner stated in the above mentioned advisory action that "Even though the references [i.e. the '333 patent] teach that steel balls are not preferred due to an undesirable effect, the media have clearly been used for the purpose in the prior art." In response, claim 21 has been amended to require the agitation to continue until the metal article achieves a superfinished surface. The '333 patent does not disclose such a limitation. In fact, the '333 patent teaches that an undeisreable result occurs, as was pointed out by the Examiner. The '544 patent does not supply this missing limitation. Therefore, Applicants respectfully submit that independent claim 21 and all claims that depend there from are now patentable over the '333 patent in view of the '544 reference.

To further illustrate the difference between the presently claimed invention and the prior art, Applicants have included Table 1 below for the Examiners assistance, as well as a number of magnifications distinguishing between various types of media.